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FOREST STATISTICS FOR THE NORTHERN COASTAL PLAIN OF NORTH CAROLINA, 1955

by

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In cooperation with the
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DEPARTMENT OF CONSERVATION AND DEVELOPMENT
DIVISION OF FORESTRY
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FOREWORD

Through the McSweeney-McNary Act of 1928, Congress authorized the Secretary of Agriculture to conduct a comprehensive survey of the forest resources of the United States. The Forest Survey was organized by the Forest Service to carry out the provisions of the Act through the Regional Forest Experiment Stations. In the Southeastern states the Forest Survey is an activity of the Division of Forest Economics of the Southeastern Forest Experiment Station, Asheville, North Carolina.

The five-fold purpose of the Forest Survey is (1) to make a field inventory of the present supply of standing timber, (2) to ascertain the rate at which this supply is being increased through growth, (3) to determine the rate at which it is being reduced through industrial and domestic uses, fire, and other causes, (4) to determine the present consumption and the probable future trend in requirements for forest products, and (5) to interpret and correlate these findings to aid in the formulation of private and public policies regarding forest land management.

The forest resources of the State of North Carolina were originally inventoried by the Forest Survey during the period 1937-38, and these findings have been published. A resurvey of the Southern Coastal Plain was made in 1952 and the statistics were published in Forest Survey Release No. 41, September 1953. The survey has now been completed in the Northern Coastal Plain and is continuing in other areas of the State.

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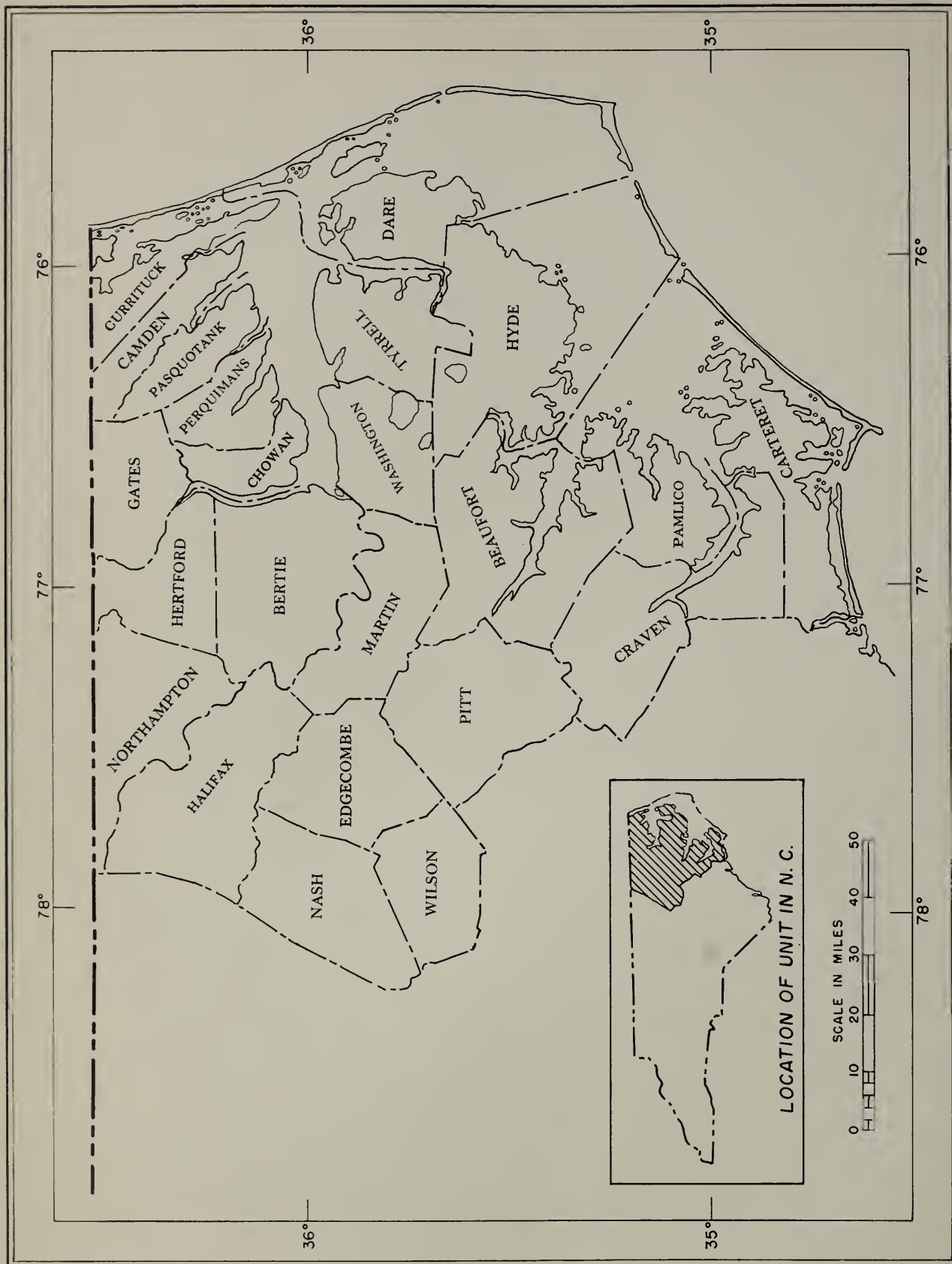


Figure 1.--Counties in the Northern Coastal Plain of North Carolina included in Survey Unit No. 2.

FOREST STATISTICS FOR THE NORTHERN COASTAL PLAIN
OF NORTH CAROLINA, 1955

This is a progress report on the resurvey of forest resources in North Carolina which is now under way. It presents statistical data on forest area, timber volumes, growth, and the amount of timber cut for the 23-county area in the Northern Coastal Plain (fig. 1). The basic information was obtained between January 1954 and February 1955 from 1,920 one-fifth acre forest sample plots. In addition, 375 non-forest plots were checked on the ground to improve the accuracy of the forest area estimate. Procedures used in conducting the survey are described in more detail on page 44.

This area was first inventoried by the Forest Survey in 1937. Since then, vast quantities of timber have been cut, and new stands have grown up to replace the old. Changes in land use and ownership have been widespread. Improvement in forest protection and management practices have also had an effect on the timber stands which exist today. The trends and changes pointed out in the following pages all stem from a comparison of statistics for both surveys. Data for the 1937 survey were adjusted wherever necessary to remove differences due to definition or other standards used, so that valid comparisons could be made.

HIGHLIGHTS AND TRENDS FOUND BY THE 1955 SURVEY

Forest area
now 9 percent greater.--The 23 counties in the Northern Coastal Plain of North Carolina contain a total land area of 6.7 million acres. In 1955, forests were found to occupy 4.4 million acres, or about two-thirds of the area. Since 1937 the acreage of forest land has increased 357 thousand acres, a gain of 9 percent. Cropland, pasture, and other agricultural uses occupy

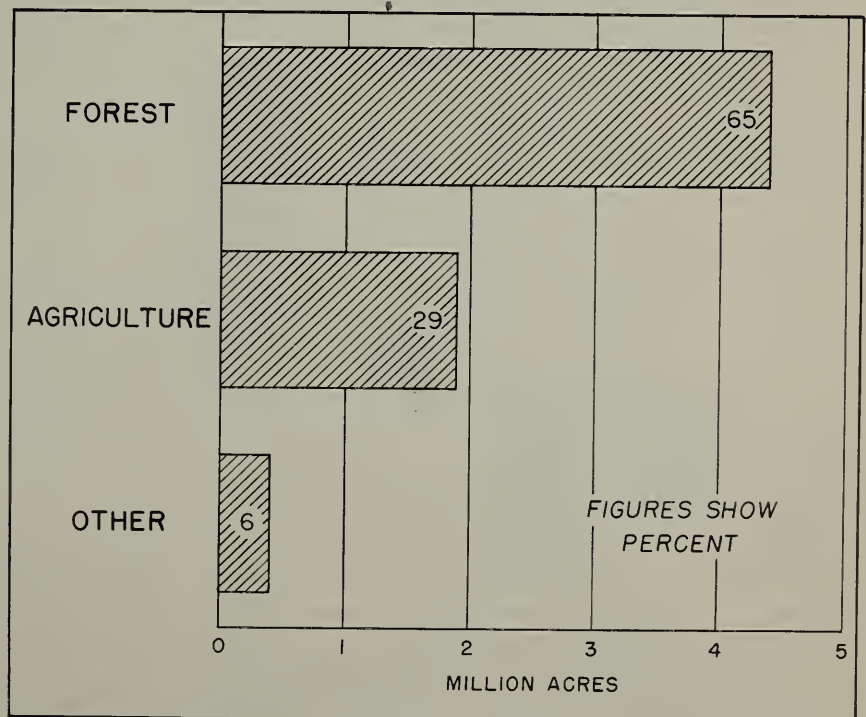


Figure 2.--Use of land in the Northern Coastal Plain of North Carolina.

1.9 million acres, and extensive areas of marsh and sand dunes exist in the coastal region. The proportions of land in forest and agricultural use are almost identical with those found in the Southern Coastal Plain in 1952.

Increases in forest area occurred in all but 4 of the 23 counties. Heaviest gains were recorded in the western portion of the unit and in the area north of Albemarle Sound, where abandonment of farmland in past years has been a contributing factor.

The Tidewater country in the eastern portion of the unit is a low, flat, poorly drained area containing broad expanses of swamp and pocosin. The word "pocosin" is believed to be of Indian origin meaning "swamp on a hill," and it describes a forest type peculiar to the coastal plain. An elevated rim around the circumference prevents adequate drainage. In the central portion of these pocosins a deep muck soil and a high water table permit only scrubby timber growth. Over 260 thousand acres of pocosin were classed as unproductive forest land because of inability to produce timber suitable for commercial use.

The bulk of the commercial forest acreage is in farm woodlands which contain 2.4 million acres, or 58 percent of the total. Industrial and other private owners hold 1.6 million acres, making the total area in private ownership slightly more than 4.0 million acres. Public ownership of commercial forest land amounts to 94 thousand acres, or only about 2 percent. Most of it is in the Croatan National Forest and the Cherry Point Marine Air Station in Carteret and Craven Counties, and along the right-of-way of the Intracoastal Waterway.

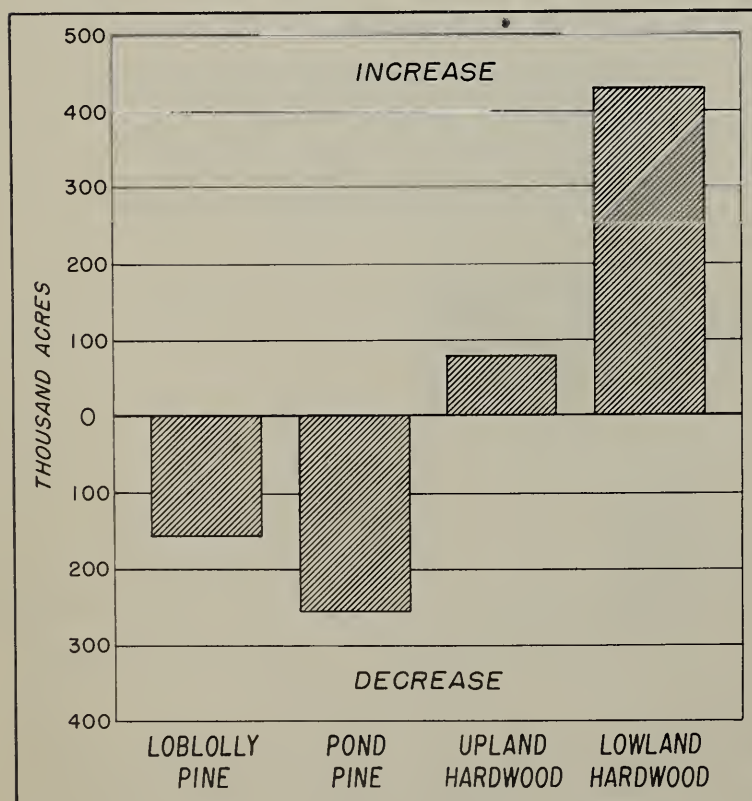


Figure 3.--Change in area of forest types, 1937 to 1955.

Acreage of pine types reduced.--A comparison of forest areas for the two surveys reveals a decrease of 412 thousand acres in pine forest types (fig. 3). The proportion of pine types existing in 1937 was 69 percent, but only 58 percent of the plots were classified as pine in 1955. In making this comparison, the 1937 type specifications were used for both surveys to provide a valid estimate of change.

Conversion of pine types to hardwoods has shown up as a persistent trend in the Coastal Plain area of North Carolina and in other areas of the Southeast as well. It usually occurs when the more valuable pine

species are cut out of mixed stands, leaving hardwoods to occupy the available growing space. To make matters worse, the residual hardwood stands often contain a high proportion of poor-quality material.

Small trees rise sharply in number.--The number of trees in all classes up to 16 inches in diameter shows a marked increase in both softwood and hardwood species groups, while the larger trees show decreases (fig. 4). These changes result from a number of factors which have influenced the development and structure of the forest stands in recent years.

Increases in the number of small trees are largely the result of better forest protection and a rapid rate of growth. A very promising feature of the change is the 64-percent increase in number of 2- and 4-inch pine trees. This means there are 150 million more young pine saplings in the present stands which will form an important part of the oncoming crop of timber. Pines in the pole and small sawtimber sizes have also made gains.

It is also apparent from figure 4 that increases in small hardwood trees of volume size have been considerably greater than in pine. This change has been brought about by continued heavy cutting of the preferred pine species. The larger, more valuable trees in both species groups have also declined in number because of heavy use. Changes in timber volume which are discussed on the following pages can be traced directly to these changes in stand structure.

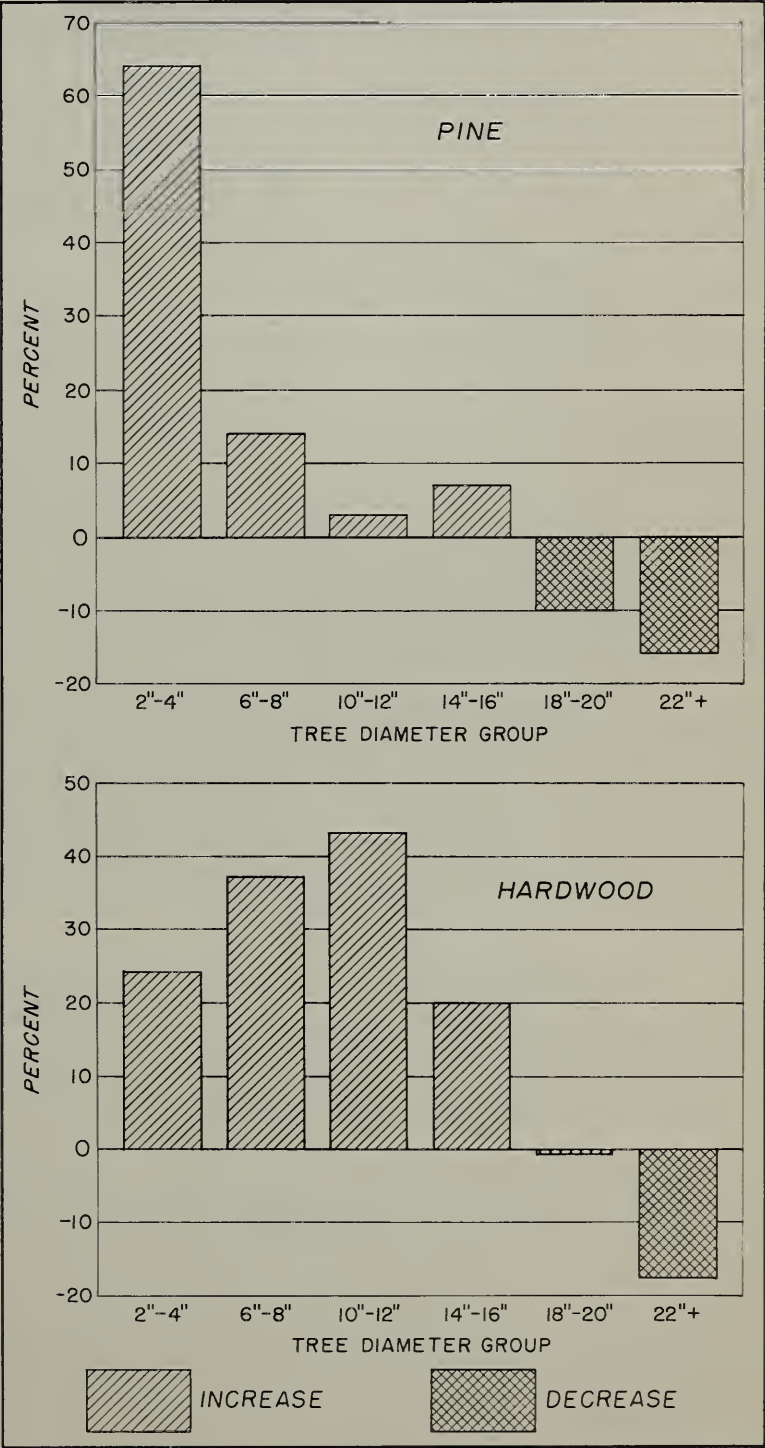


Figure 4.--Change in number of sound trees since 1937.

Pine sawtimber volume holds its own.--One important highlight of the 1955 survey is the fact that yellow pine sawtimber volume has held up very well in spite of heavy demand in recent years. There is now less longleaf, loblolly, and shortleaf pine but more pond pine available. Pond pine is usually found on wet or swampy sites and is less accessible. Losses in large trees have been offset by increases in small trees. The net result is a slight increase in total pine volume as indicated in table A.

Table A.--Comparison of sawtimber volume, 1937 and 1955

Species group	1937 ^{1/}	1955	Change	
	<u>Million bd. ft.</u>	<u>Million bd. ft.</u>	<u>Million bd. ft.</u>	<u>Percent</u>
Yellow pines	9,064	9,142	+ 78	+ 1
Cypress and cedar	1,228	934	-294	-24
Hardwoods	5,777	6,218	+441	+ 8
All species	16,069	16,294	+225	+ 1

^{1/} Original survey volumes have been recomputed to allow for differences in standards between the two surveys and to provide a uniform basis for comparison. Thus, the 1937 estimates shown here will not agree with the volumes previously published.

Throughout the range of yellow pine in this unit many stands are found growing on excellent sites. The sawtimber stands have better than average stocking, and the average volume per acre is probably the highest to be found anywhere in the State. Under these conditions, growth has been able to replace the amount of pine cut and used for all the various industrial and domestic purposes. However, a larger proportion of the board-foot volume is now found in small sawtimber trees.

During the period between surveys hardwood sawtimber increased by 441 million board feet, or 8 percent, while the volume of cypress and whitecedar went down nearly 25 percent. Cypress and cedar are durable species much in demand for boat and water tank construction. The drain on whitecedar has been particularly heavy, reducing the volume of this species by nearly 65 percent. There were slight decreases in the volume of blackgum, sweetgum, and yellow-poplar, and heavy increases in other hardwoods, particularly oaks.

Loblolly pine is principal species.--The most important timber tree in the Northern Coastal Plain is loblolly pine. This species alone, with a volume in excess of 7 billion board feet, makes up 75 percent of the softwood and 45 percent of the total sawtimber volume (fig. 5). Pond pine and cypress are the only other softwood species of any consequence. In the hardwoods, tupelo, black, and sweetgum are the predominating species and together they make up 60 percent of the volume in hardwood sawtimber trees.

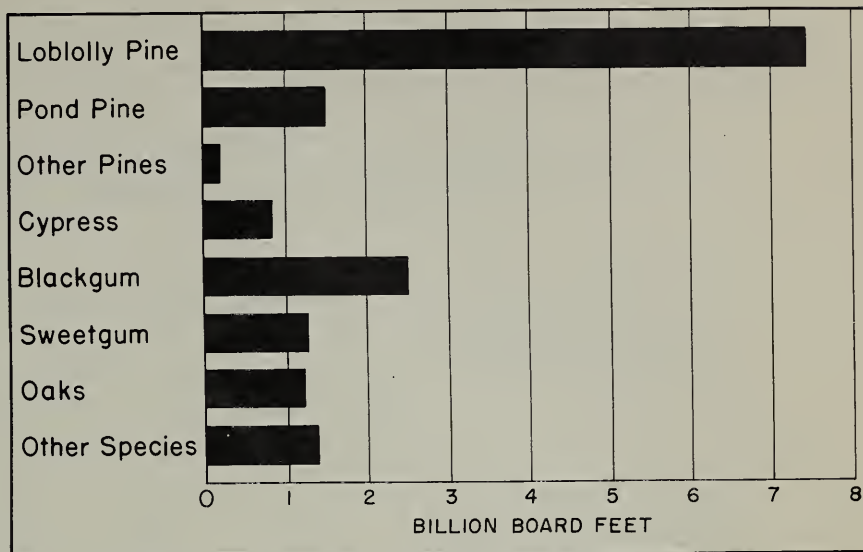


Figure 5.--Volume of sawtimber by species.

Nearly half of the available sawtimber is in trees which measure 12 and 14 inches in diameter at breast height, a point four and one-half feet above ground (fig. 6). More than 80 percent is in trees less than 19 inches in size. The proportion of hardwood volume in each diameter class increases with tree size. Starting at 35 percent in the 12-inch class, it runs to more than 60 percent in trees 22 inches and larger.

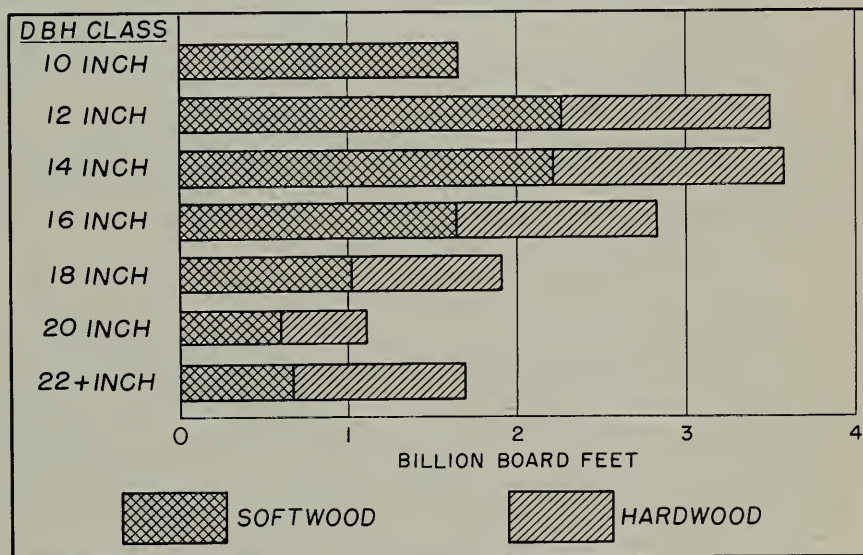


Figure 6.--Distribution of sawtimber volume by diameter class.

Growing stock up 8 percent.--Since 1937, the volume of growing stock has increased 8 percent. However, as table B indicates, the trends for the various species groups have differed widely. Pine volume is up slightly, hardwoods show a very substantial increase, and cypress and cedar suffered a heavy loss. The opposite trends in softwood species leave the total softwood volume practically unchanged since the original survey. The major increase is in hardwood species.

Growing stock is a term which includes all sound pole-size trees (starting at 5.0 inches in diameter) as well as the larger sawtimber trees. Volumes of solid wood, excluding bark, are computed in terms of cubic feet. Trees smaller than 5 inches in diameter are called seedlings or saplings, and they are not assigned volume for inventory purposes.

Table B.--Comparison of volume in all trees 5.0 inches d.b.h. and larger, 1937 to 1955

GROWING STOCK				
Species group	1937 ^{1/}	1955	Change	
	<u>Million cu. ft.</u>	<u>Million cu. ft.</u>	<u>Million cu. ft.</u>	<u>Percent</u>
Yellow pines	2,247	2,324	+ 77	+ 3
Cypress and cedar	287	224	- 63	- 22
Hardwoods	1,741	2,079	+338	+ 19
All species	4,275	4,627	+352	+ 8

CULL TREES				
Yellow pines	97	85	- 12	- 12
Cypress and cedar	13	27	+ 14	+108
Hardwoods ^{2/}	456	702	+246	+ 54
All species	566	814	+248	+ 44

^{1/} See footnote 1, table A.

^{2/} Excludes limb volume of hardwood sawtimber trees.

The amount of material in cull trees, particularly hardwoods, also increased sharply. In both surveys tree quality was judged on the ability to produce merchantable saw logs either at the time of inventory or in the future. The cull tree volumes shown in table A are contained in trees too crooked, limby, or rotten to be cut into logs. However, they are not entirely worthless. Many of them can be used to produce fence posts, pulpwood, fuelwood, and other products where clear length, straightness, and soundness are not limiting factors. The increase in cull hardwood volume poses a difficult problem in forest management. These trees occupy valuable growing space which could be used for the production of higher grade material, yet, since they cannot pay their way, they are seldom removed from the stand in commercial saw-log operations.

Annual growth of growing stock totals 3.3 million cords; saw-timber growth 824 million board feet.--Forests in the Northern Coastal Plain are producing an annual volume of timber equal to 3.3 million cords of wood, including bark, or 227 million cubic feet of solid wood. This amount includes ingrowth and the growth which takes place on all sound trees 5.0 inches d.b.h. and larger. Yellow pines are producing at the rate of 1.8 million cords per year, or about 55 percent of the total growth of all species. Growth on sawtimber-size trees amounted to 824 million board feet, of which 68 percent was pine.

Estimates of volume growth are based on increment cores taken from thousands of sample trees throughout all counties in the unit. These cores are used to determine the rate of tree diameter growth. They also indicate the number of young trees which may be expected to grow into volume size during the course of a year, thus establishing the volume of ingrowth. Net growth is arrived at by subtracting timber mortality losses by insects, disease, fire, and other natural causes from the total growth estimate. Ingrowth from sapling trees makes up approximately 10 percent of the net growth in growing stock, and trees growing from pole to sawtimber size make up about one-fourth of the increase in board-foot volume.

In terms of growth per acre, stands of loblolly pine show the highest rate of production, with an average of 325 board feet, or 1.1 cords, per year. Stands in all forest types and conditions averaged 226 board feet, or 0.9 cord, per acre per year. These rates for Unit 2 are about one-third higher than those found in the Southern Coastal Plain, reflecting better stocking and site conditions. The average production of 423 board feet per acre per year in stands of loblolly pine sawtimber will probably be the highest rate found anywhere in North Carolina.

Timber supply is building up.--A comparison of growth with the amount of timber cut shows that timber volumes are gradually increasing (table C). Sawtimber cut for all purposes exceeded 500 million board feet, but the excess of growth over the amount cut left a gain of 268 million feet. A parallel trend was found in growing stock, where nearly half of the total amount of wood produced was left to build up the supply.

Table C.--Comparison of net annual growth and timber cut

Species group	Sawtimber			Growing stock		
	Growth	Cut	Change	Growth	Cut	Change
	<u>Million board feet</u>			<u>Million cubic feet</u>		
Yellow pines	563.4	398.4	+165.0	125.8	85.4	+ 40.4
Cypress and cedar	22.5	21.7	+ .8	5.1	5.2	- .1
Hardwoods	238.0	135.6	+102.4	96.2	34.1	+ 62.1
All species	823.9	555.7	+268.2	227.1	124.7	+102.4

This favorable trend was found in all species groups except cypress and whitecedar, which are relatively slow-growing species and which are still being cut heavily. The annual rate of increase on growing stock ranges from 1.7 percent for pine to 3.0 percent for the soft hardwood species.

In the previous discussion of stand structure it was pointed out that small hardwood trees are increasing in number more rapidly than pine. This trend also shows up in the volume change resulting from the interaction of growth, timber cutting, and mortality. The annual increase in hardwood sawtimber makes up only 38 percent of the gain in board-foot volume, but the increase in hardwood growing stock is 61 percent of the total. The tendency for hardwoods to increase can be expected to continue in the future unless the utilization of these species can be stimulated.

Table 1.--Gross area^{1/} by broad use class, 1955

Class of use	Area	
	<u>Thousand acres</u>	<u>Percent</u>
Forest land:		
Commercial	4,140.4	46.6
Noncommercial:		
Productive-reserved	0.4	(<u>2/</u>)
Unproductive	261.4	2.9
Total forest	4,402.2	49.5
Nonforest land:		
Agriculture	1,929.5	21.7
Marsh	205.1	2.3
Urban and other ^{3/}	208.4	2.4
Total nonforest	2,343.0	26.4
Total land area	6,745.2	75.9
Total water area ^{4/}	2,145.7	24.1
All classes	8,890.9	100.0

1/ From U. S. Bureau of the Census, 1950.

2/ Less than 0.05 percent.

3/ Includes urban, suburban residential, and rural industrial areas, rights-of-way, cemeteries, schools, etc.

4/ Census water area reported in 1950 plus 3,200 acres of Census water created since 1950. Also includes 32,400 acres of water according to Survey standards but defined by the Bureau of Census as land area.

Table 2.--Ownership of commercial forest land, 1955

Class of ownership	Commercial forest land	
	<u>Thousand acres</u>	<u>Percent</u>
Public land:		
National forest	75.9	1.8
Indian	--	--
Other Federal	13.0	0.3
Total Federal	88.9	2.1
State	2.4	0.1
County and municipal	2.8	0.1
Total public	94.1	2.3
Private land:		
Farm	2,415.6	58.3
Other	1,630.7	39.4
Total private	4,046.3	97.7
All classes	4,140.4	100.0

Table 3.--Commercial forest area by forest type and stand-size class, 1955

(In thousand acres)

Forest type ^{1/}	Large sawtimber stands	Small sawtimber stands	Pole- timber stands	Seedling & sapling stands	Poorly stocked stands & unstocked areas	All stands
Pine types:						
Longleaf pine	2.2	14.9	23.7	14.3	--	55.1
Loblolly pine	318.8	655.6	282.6	131.8	20.7	1,409.5
Shortleaf pine	--	9.4	13.5	7.0	2.6	32.5
Pond pine	47.0	213.7	141.8	198.6	46.7	647.8
Total	368.0	893.6	461.6	351.7	70.0	2,144.9
Other types:						
Oak-pine	88.6	123.7	100.2	77.5	7.3	397.3
Oak-hickory:						
Upland hdwds.	57.9	63.8	41.8	33.5	--	197.0
Scrub oak	--	--	--	2.1	--	2.1
Oak-gum-cypress	465.6	358.7	278.2	238.3	58.3	1,399.1
Total	612.1	546.2	420.2	351.4	65.6	1,995.5
All types	980.1	1,439.8	881.8	703.1	135.6	4,140.4
Percent	23.6	34.8	21.3	17.0	3.3	100.0

^{1/} See description of forest types and stand-size classes under Definition of Terms.

Table 4.--Net volume^{1/} of sawtimber by species and stand-size class, 1955

(In million board feet)

Species ^{2/}	Large sawtimber stands	Small sawtimber stands	Pole- timber stands	Seedling & sapling stands	Poorly stocked stands & unstocked areas	All stands
Softwoods:						
Longleaf pine	20.7	69.2	18.5	5.5	0.6	114.5
Loblolly pine	2,913.0	4,065.5	334.6	108.8	10.5	7,432.4
Pond pine	228.9	1,037.3	119.9	86.2	15.9	1,488.2
Shortleaf pine	21.9	70.2	9.5	4.4	0.9	106.9
Total pine	3,184.5	5,242.2	482.5	204.9	27.9	9,142.0
Cypress	492.7	278.7	34.1	10.7	--	816.2
Cedar	37.9	73.4	6.5	--	--	117.8
Total sftwds.	3,715.1	5,594.3	523.1	215.6	27.9	10,076.0
Hardwoods:						
Bl. & tupelo gum	1,456.7	937.3	57.7	32.8	3.7	2,488.2
Sweetgum	797.0	402.1	81.1	10.5	0.7	1,291.4
Yellow-poplar	178.4	80.3	20.8	2.4	--	281.9
Soft maple	202.8	115.2	28.1	3.3	9.3	358.7
Other soft hdwds.	158.8	30.8	11.7	0.5	1.2	203.0
Total	2,793.7	1,565.7	199.4	49.5	14.9	4,623.2
White & swamp chestnut oaks	231.7	177.4	52.4	11.0	--	472.5
Other white oaks	54.7	36.0	10.4	11.8	--	112.9
No. red & swamp red oaks	147.6	32.0	1.8	1.8	--	183.2
Other red oaks	266.3	126.3	27.8	1.6	1.8	423.8
Hickory	40.7	29.4	12.3	3.9	--	86.3
Ash	151.8	26.3	2.8	0.8	--	181.7
Other hard hdwds.	78.6	37.0	13.0	5.9	--	134.5
Total	971.4	464.4	120.5	36.8	1.8	1,594.9
Total hdwds.	3,765.1	2,030.1	319.9	86.3	16.7	6,218.1
All species	7,480.2	7,624.4	843.0	301.9	44.6	16,294.1
Percent	45.9	46.8	5.2	1.8	0.3	100.0

^{1/} Log scale, International 1/4-inch rule.^{2/} See Definition of Terms for species combined with others.

Table 5.--Net volume^{1/} of sawtimber by species and diameter class, 1955

Species	10-12 inches ^{2/}	14-18 inches	20-24 inches	26+ inches	All diameters	
	<u>Million</u> <u>bd. ft.</u>	<u>Million</u> <u>bd. ft.</u>	<u>Million</u> <u>bd. ft.</u>	<u>Million</u> <u>bd. ft.</u>	<u>Million</u> <u>bd. ft.</u>	<u>Percent</u>
Softwoods:						
Longleaf pine	51.5	42.3	13.7	7.0	114.5	0.7
Loblolly pine	2,707.8	3,699.2	931.6	93.8	7,432.4	45.6
Pond pine	861.2	600.7	26.3	--	1,488.2	9.1
Shortleaf pine	64.5	42.4	--	--	106.9	0.7
Total pine	3,685.0	4,384.6	971.6	100.8	9,142.0	56.1
Cypress	185.0	460.2	135.2	35.8	816.2	5.0
Cedar	66.3	40.7	10.8	--	117.8	0.7
Total sftwds.	3,936.3	4,885.5	1,117.6	136.6	10,076.0	61.8
Hardwoods:						
Bl. & tupelo gum	509.6	1,438.5	384.3	155.8	2,488.2	15.3
Sweetgum	291.7	745.6	189.2	64.9	1,291.4	7.9
Yellow-poplar	61.9	186.8	25.8	7.4	281.9	1.7
Soft maple	67.4	217.6	66.7	7.0	358.7	2.2
Other soft hdwds.	30.0	102.4	70.6	--	203.0	1.3
Total	960.6	2,690.9	736.6	235.1	4,623.2	28.4
White & swamp chestnut oaks	91.9	221.6	85.2	73.8	472.5	2.9
Other white oaks	25.2	38.3	19.0	30.4	112.9	0.7
No. red & swamp red oaks	19.1	75.4	55.2	33.5	183.2	1.1
Other red oaks	60.7	202.4	92.7	68.0	423.8	2.6
Hickory	20.1	44.5	21.7	--	86.3	0.5
Ash	31.6	98.2	31.4	20.5	181.7	1.1
Other hard hdwds.	28.9	59.6	35.9	10.1	134.5	0.9
Total	277.5	740.0	341.1	236.3	1,594.9	9.8
Total hdwds.	1,238.1	3,430.9	1,077.7	471.4	6,218.1	38.2
All species	5,174.4	8,316.4	2,195.3	608.0	16,294.1	100.0
Percent	31.8	51.0	13.5	3.7	100.0	

^{1/} Log scale, International 1/4-inch rule.

^{2/} Ten-inch hardwoods are not included.

Table 6.--Net volume^{1/} of sawtimber by forest type and stand-size class, 1955

(In million board feet)

Forest type	Large sawtimber stands	Small sawtimber stands	Pole- timber stands	Seedling & sapling stands	Poorly stocked stands & unstocked areas	All stands
Pine types:						
Longleaf pine	25.4	52.6	16.2	1.3	--	95.5
Loblolly pine	2,808.8	4,025.2	271.8	70.9	8.8	7,185.5
Shortleaf pine	--	47.6	13.5	--	--	61.1
Pond pine	228.8	1,020.9	116.4	68.8	16.9	1,451.8
Total	3,063.0	5,146.3	417.9	141.0	25.7	8,793.9
Other types:						
Oak-pine	612.0	503.6	117.9	29.9	--	1,263.4
Oak-hickory:						
Upland hdwds.	299.1	213.9	43.5	22.3	--	578.8
Scrub oak	--	--	--	--	--	--
Oak-gum-cypress	3,506.1	1,760.6	263.7	108.7	18.9	5,658.0
Total	4,417.2	2,478.1	425.1	160.9	18.9	7,500.2
All types	7,480.2	7,624.4	843.0	301.9	44.6	16,294.1
Percent	45.9	46.8	5.2	1.8	0.3	100.0

^{1/} Log scale, International 1/4-inch rule.

Table 7.--Net volume of sawtimber by species group, log grade, and tree-size class, 1955

PINE

Log grade	10 - 14 inches ^{1/}		16+ inches		All trees	
	<u>Million</u> <u>bd. ft.</u>	<u>Percent</u>	<u>Million</u> <u>bd. ft.</u>	<u>Percent</u>	<u>Million</u> <u>bd. ft.</u>	<u>Percent</u>
Grade 1	--	--	157.5	4.6	157.5	1.7
Grade 2	1,315.1	23.0	1,376.5	40.2	2,691.6	29.5
Grade 3	2,984.8	52.2	1,085.4	31.7	4,070.2	44.5
Grade 4	1,418.0	24.8	804.7	23.5	2,222.7	24.3
Total	5,717.9	100.0	3,424.1	100.0	9,142.0	100.0

OTHER SOFTWOODS

Grade 1	--	--	81.7	16.7	81.7	8.8
Grade 2	265.1	59.6	309.7	63.3	574.8	61.5
Grade 3	179.7	40.4	34.2	7.0	213.9	22.9
Grade 4	--	--	63.6	13.0	63.6	6.8
Total	444.8	100.0	489.2	100.0	934.0	100.0

SOFT HARDWOODS

Grade 1	--	--	444.0	17.3	444.0	9.6
Grade 2	292.0	14.2	590.3	23.0	882.3	19.1
Grade 3	890.5	43.3	672.5	26.2	1,563.0	33.8
Grade 4	874.0	42.5	859.9	33.5	1,733.9	37.5
Total	2,056.5	100.0	2,566.7	100.0	4,623.2	100.0

HARD HARDWOODS

Grade 1	--	--	99.3	9.4	99.3	6.2
Grade 2	--	--	329.6	31.2	329.6	20.7
Grade 3	156.1	29.0	255.7	24.2	411.8	25.8
Grade 4	382.3	71.0	371.9	35.2	754.2	47.3
Total	538.4	100.0	1,056.5	100.0	1,594.9	100.0

^{1/} Ten-inch hardwoods not included since they are below sawtimber size.

Table 8.--Net volume^{1/} of all timber by species and stand-size class, 1955

(In thousand cords)

GROWING STOCK						
Species	Large sawtimber stands	Small sawtimber stands	Pole- timber stands	Seedling & sapling stands	Poorly stocked stands & unstocked areas	All stands
Softwoods:						
Longleaf pine	50	239	268	26	2	585
Loblolly pine	7,230	13,783	2,877	419	39	24,348
Pond pine	685	3,949	1,181	270	50	6,135
Shortleaf pine	59	275	89	15	4	442
Total pine	8,024	18,246	4,415	730	95	31,510
Cypress	1,101	760	105	30	--	1,996
Cedar	113	306	230	--	--	649
Total sftwds.	9,238	19,312	4,750	760	95	34,155
Hardwoods:						
Bl. & tupelo gum	5,034	4,263	651	111	13	10,072
Sweetgum	2,921	2,077	892	82	7	5,979
Yellow-poplar	632	413	145	26	--	1,216
Soft maple	974	813	429	14	50	2,280
Other soft hwdws.	609	283	233	2	4	1,131
Total	10,170	7,849	2,350	235	74	20,678
White & swamp chestnut oaks	880	866	275	37	--	2,058
Other white oaks	182	261	96	38	--	577
No. red & swamp red oaks	435	136	5	5	--	581
Other red oaks	958	662	249	45	6	1,920
Hickory	176	128	67	12	--	383
Ash	651	198	73	3	--	925
Dogwood, holly	158	144	103	4	--	409
Other hard hwdws.	227	149	81	14	--	471
Total	3,667	2,544	949	158	6	7,324
Total hwdws.	13,837	10,393	3,299	393	80	28,002
All species	23,075	29,705	8,049	1,153	175	62,157
Percent	37.1	47.8	12.9	1.9	0.3	100.0

OTHER MATERIAL						
Sound culls :						
Softwoods	303	510	276	215	67	1,371
Hardwoods	3,219	2,620	1,628	688	182	8,337
Rotten culls	601	415	258	65	4	1,343
Hardwood limbs	1,432	499	175	56	11	2,173
Total other material	5,555	4,044	2,337	1,024	264	13,224

Table 9.- Net volume^{1/} of all timber by species and diameter class, 1955

(In thousand cords)

GROWING STOCK

Species	Pole trees ^{2/}		Sawtimber trees				All diameters
	6 inches	8 inches	10 inches	12 inches	14-18 inches	20+ inches	
Softwoods:							
Longleaf pine	92	172	88	77	112	44	585
Loblolly pine	1,847	3,103	3,868	4,753	8,629	2,148	24,348
Pond pine	611	1,285	1,488	1,188	1,506	57	6,135
Shortleaf pine	81	47	124	81	109	--	442
Total pine	2,631	4,607	5,568	6,099	10,356	2,249	31,510
Cypress	59	121	200	342	966	308	1,996
Cedar	164	212	90	82	80	21	649
Total sftwds.	2,854	4,940	5,858	6,523	11,402	2,578	34,155
Hardwoods:							
Bl. & tupelo gum	641	996	1,477	1,665	4,030	1,263	10,072
Sweetgum	728	757	891	949	2,059	595	5,979
Yellow-poplar	83	152	189	198	516	78	1,216
Soft maple	289	393	523	263	636	176	2,280
Other soft hdwds.	166	153	230	118	295	169	1,131
Total	1,907	2,451	3,310	3,193	7,536	2,281	20,678
White & swamp chestnut oaks	199	228	211	333	677	410	2,058
Other white oaks	63	113	55	96	123	127	577
No. red & swamp red oaks	10	60	35	63	203	210	581
Other red oaks	158	257	268	222	604	411	1,920
Hickory	18	72	26	74	136	57	383
Ash	79	122	212	122	273	117	925
Dogwood, holly	98	148	73	43	47	--	409
Other hard hdwds.	14	69	68	62	139	119	471
Total	639	1,069	948	1,015	2,202	1,451	7,324
Total hdwds.	2,546	3,520	4,258	4,208	9,738	3,732	28,002
All species	5,400	8,460	10,116	10,731	21,140	6,310	62,157
Percent	8.7	13.6	16.3	17.3	34.0	10.1	100.0

OTHER MATERIAL

Sound culls:							
Softwoods	274	248	235	168	279	167	1,371
Hardwoods	1,299	1,230	837	878	2,182	1,911	8,337
Rotten culls	46	111	88	108	329	661	1,343
Hardwood limbs	--	--	--	128	1,038	1,007	2,173
Total other material	1,619	1,589	1,160	1,282	3,828	3,746	13,224

^{1/} Sound wood and bark.^{2/} Ten-inch hardwoods are classed as pole-size trees.

Table 10.--Net volume^{1/} of all timber by species and class of material, 1955

(In thousand cords)

Species	GROWING STOCK				OTHER MATERIAL	
	Sawtimber trees		Pole-timber trees	Total sound trees	Sound culls ^{2/}	Rotten culls
	Saw-log portion	Upper stems				
Softwoods:						
Longleaf pine	232	89	264	585	20	2
Loblolly pine	14,939	4,459	4,950	24,348	565	10
Pond pine	3,273	966	1,896	6,135	581	5
Shortleaf pine	230	84	128	442	9	--
Total pine	18,674	5,598	7,238	31,510	1,175	17
Cypress	1,389	427	180	1,996	151	103
Cedar	248	25	376	649	45	5
Total sftwds.	20,311	6,050	7,794	34,155	1,371	125
Hardwoods:						
Bl. & tupelo gum	5,268	1,690	3,114	10,072	3,326	644
Sweetgum	2,709	894	2,376	5,979	1,195	134
Yellow-poplar	577	215	424	1,216	142	10
Soft maple	700	375	1,205	2,280	1,784	305
Other soft hdwds.	390	192	549	1,131	673	59
Total	9,644	3,366	7,668	20,678	7,120	1,152
White & swamp chestnut oaks	933	487	638	2,058	577	26
Other white oaks	226	120	231	577	280	7
No. red & swamp red oaks	356	120	105	581	168	3
Other red oaks	829	408	683	1,920	946	41
Hickory	172	95	116	383	136	9
Ash	376	136	413	925	273	43
Dogwood, holly	52	38	319	409	183	14
Scrub oak ^{3/}	--	--	--	--	345	28
Other hard hdwds.	208	112	151	471	340	37
Total	3,152	1,516	2,656	7,324	3,248	208
Total hdwds.	12,796	4,882	10,324	28,002	10,368	1,360
All species	33,107	10,932	18,118	62,157	11,739	1,485
Percent	53.3	17.6	29.1	100.0	88.8	11.2

^{1/} Sound wood and bark.

^{2/} Includes limb volume of hardwood sawtimber trees.

^{3/} Includes noncommercial species.

Table 11.--Net volume^{1/} of all timber by forest type and stand-size class, 1955

(In thousand cords)

GROWING STOCK

Forest type	Large sawtimber stands	Small sawtimber stands	Pole- timber stands	Seedling & sapling stands	Poorly stocked stands & unstocked areas	All stands
Pine types:						
Longleaf pine	66	191	259	14	--	530
Loblolly pine	7,810	14,502	2,737	294	35	25,378
Shortleaf pine	--	160	89	--	--	249
Pond pine	678	3,905	1,188	215	53	6,039
Total	8,554	18,758	4,273	523	88	32,196
Other types:						
Oak-pine	1,922	2,258	688	151	--	5,019
Oak-hickory:						
Upland hdwds.	995	996	295	76	--	2,362
Scrub oak	--	--	--	--	--	--
Oak-gum-cypress	11,604	7,693	2,793	403	87	22,580
Total	14,521	10,947	3,776	630	87	29,961
All types	23,075	29,705	8,049	1,153	175	62,157
Percent	37.1	47.8	12.9	1.9	0.3	100.0

OTHER MATERIAL

Pine types:						
Longleaf pine	25	12	--	--	--	37
Loblolly pine	761	950	342	133	5	2,191
Shortleaf pine	--	6	9	12	--	27
Pond pine	80	202	116	133	62	593
Total	866	1,170	467	278	67	2,848
Other types:						
Oak-pine	355	439	216	98	2	1,110
Oak-hickory:						
Upland hdwds.	324	164	113	61	--	662
Scrub oak	--	--	--	--	--	--
Oak-gum-cypress	4,010	2,271	1,541	587	195	8,604
Total	4,689	2,874	1,870	746	197	10,376
All types	5,555	4,044	2,337	1,024	264	13,224
Percent	42.0	30.6	17.7	7.7	2.0	100.0

^{1/} Sound wood and bark.

Table 12.--Net volume^{1/} of all timber by species and diameter class, 1955

(In million cubic feet)

GROWING STOCK							
Species	Pole trees ^{2/}		Sawtimber trees				All diameters
	6 inches	8 inches	10 inches	12 inches	14-18 inches	20+ inches	
Softwoods:							
Longleaf pine	5.2	11.7	5.3	6.1	8.5	3.8	40.6
Loblolly pine	107.1	208.3	274.8	344.6	697.3	182.2	1,814.3
Pond pine	36.3	86.4	96.9	94.7	119.2	4.8	438.3
Shortleaf pine	5.0	3.1	8.5	6.0	8.4	--	31.0
Total pine	153.6	309.5	385.5	451.4	833.4	190.8	2,324.2
Cypress	4.0	9.0	15.4	27.8	87.1	29.0	172.3
Cedar	11.2	15.8	8.1	7.3	7.7	1.9	52.0
Total sftwds.	168.8	334.3	409.0	486.5	928.2	221.7	2,548.5
Hardwoods:							
Bl. & tupelo gum	36.7	66.0	106.3	125.7	313.9	105.3	753.9
Sweetgum	40.5	49.5	64.4	71.9	161.3	49.6	437.2
Yellow-poplar	4.7	10.2	13.6	15.2	40.4	6.5	90.6
Soft maple	16.5	25.6	37.7	20.8	51.9	14.6	167.1
Other soft hdwds.	9.1	9.9	16.5	9.2	24.1	14.1	82.9
Total	107.5	161.2	238.5	242.8	591.6	190.1	1,531.7
White & swamp chestnut oaks	11.5	15.1	15.2	25.6	53.0	33.8	154.2
Other white oaks	3.8	7.3	4.0	7.0	9.4	10.5	42.0
No. red & swamp red oaks	0.5	3.9	2.5	5.0	16.2	17.6	45.7
Other red oaks	9.2	17.0	19.4	16.9	47.9	34.1	144.5
Hickory	1.1	4.8	1.9	5.6	10.7	4.6	28.7
Ash	4.6	7.9	15.4	9.0	21.8	9.6	68.3
Dogwood, holly	5.8	9.8	5.2	3.3	3.6	--	27.7
Other hard hdwds.	0.8	4.5	5.0	4.7	10.7	9.8	35.5
Total	37.3	70.3	68.6	77.1	173.3	120.0	546.6
Total hdwds.	144.8	231.5	307.1	319.9	764.9	310.1	2,078.3
All species	313.6	565.8	716.1	806.4	1,693.1	531.8	4,626.8
Percent	6.8	12.2	15.5	17.4	36.6	11.5	100.0

OTHER MATERIAL

Sound culls:							
Softwoods	15.6	16.5	17.0	13.3	23.0	14.8	100.2
Hardwoods	75.0	80.8	60.0	64.0	172.2	158.3	610.3
Rotten culls	2.8	7.1	6.4	5.4	25.5	56.3	103.5
Hardwood limbs	--	--	--	7.2	76.1	78.2	161.5
Total other material	93.4	104.4	83.4	89.9	296.8	307.6	975.5

^{1/} Excluding bark.^{2/} Ten-inch hardwoods are classed as pole-size trees.

Table 13.--Net volume^{1/} of all timber by species and class of material, 1955

(In million cubic feet)

Species	GROWING STOCK				OTHER MATERIAL	
	Sawtimber trees		Pole-timber trees	Total sound trees	Sound culls ^{2/}	Rotten culls
	Saw-log portion	Upper stems				
Softwoods:						
Longleaf pine	18.6	5.1	16.9	40.6	1.6	0.1
Loblolly pine	1,214.0	284.9	315.4	1,814.3	41.5	0.8
Pond pine	248.9	66.7	122.7	438.3	39.9	0.4
Shortleaf pine	18.1	4.8	8.1	31.0	0.6	--
Total pine	1,499.6	361.5	463.1	2,324.2	83.6	1.3
Cypress	127.7	31.6	13.0	172.3	13.3	10.2
Cedar	20.0	5.0	27.0	52.0	3.3	0.4
Total sftwds.	1,647.3	398.1	503.1	2,548.5	100.2	11.9
Hardwoods:						
Bl. & tupelo gum	413.3	131.6	209.0	753.9	251.3	51.8
Sweetgum	214.9	67.9	154.4	437.2	85.4	10.8
Yellow-poplar	47.1	15.0	28.5	90.6	10.1	0.6
Soft maple	57.8	29.5	79.8	167.1	126.9	24.0
Other soft hwdws.	32.2	15.2	35.5	82.9	46.3	4.7
Total	765.3	259.2	507.2	1,531.7	520.0	91.9
White & swamp chestnut oaks	76.3	36.1	41.8	154.2	43.0	1.8
Other white oaks	18.2	8.7	15.1	42.0	20.3	0.4
No. red & swamp red oaks	28.7	10.1	6.9	45.7	13.4	0.3
Other red oaks	67.6	31.3	45.6	144.5	71.0	3.1
Hickory	14.2	6.7	7.8	28.7	10.0	0.7
Ash	29.6	10.8	27.9	68.3	19.3	3.3
Dogwood, holly	4.6	2.3	20.8	27.7	12.5	0.9
Scrub oak ^{3/}	--	--	--	--	21.6	1.8
Other hard hwdws.	17.3	7.9	10.3	35.5	25.2	2.9
Total	256.5	113.9	176.2	546.6	236.3	15.2
Total hwdws.	1,021.8	373.1	683.4	2,078.3	756.3	107.1
All species	2,669.1	771.2	1,186.5	4,626.8	856.5	119.0
Percent	57.7	16.7	25.6	100.0	87.8	12.2

^{1/} Excluding bark.^{2/} Includes limb volume of hardwood sawtimber trees.^{3/} Includes noncommercial species.

Table 14.--Average volume^{1/} per acre of sawtimber by forest type,
species group, and stand-size class, 1955

(In board feet)

Forest type and species group	Large sawtimber stands	Small sawtimber stands	Pole- timber stands	Other stand sizes	All stands
Longleaf pine					
Softwood	8,932	3,464	685	92	1,611
Hardwood	2,766	48	--	--	122
Loblolly pine					
Softwood	7,910	5,752	834	452	4,681
Hardwood	899	389	128	71	417
Shortleaf pine					
Softwood	--	4,495	618	--	1,557
Hardwood	--	557	376	--	317
Pond pine					
Softwood	4,869	4,755	821	349	2,234
Hardwood	--	23	--	--	8
Oak-pine					
Softwood	3,225	1,978	740	269	1,579
Hardwood	3,679	2,095	436	84	1,601
Upland hwdws.					
Softwood	348	559	84	292	351
Hardwood	4,816	2,796	956	375	2,587
Oak-gum-cypress					
Softwood	1,372	1,208	247	186	855
Hardwood	6,159	3,699	701	245	3,189
All types					
Softwood	3,790	3,885	593	290	2,434
Hardwood	3,842	1,410	363	123	1,502

^{1/} Log scale, International 1/4-inch rule.

Table 15.--Average volume^{1/} per acre of all trees by forest type, species group,
and stand-size class, 1955

(In standard cords)

Forest type and species group	Large sawtimber stands		Small sawtimber stands		Pole- timber stands		Other stand sizes		All stands	
	Sound ^{2/}	Cull ^{3/}	Sound	Cull	Sound	Cull	Sound	Cull	Sound	Cull
Longleaf pine										
Softwood	18.9	4.6	12.4	0.1	10.9	--	1.0	--	9.1	0.2
Hardwood	11.5	6.9	0.3	0.7	--	--	--	--	0.5	0.5
Loblolly pine										
Softwood	19.8	0.4	19.3	0.3	8.7	0.4	1.9	0.4	15.4	0.4
Hardwood	4.7	2.0	2.8	1.1	0.9	0.8	0.2	0.5	2.6	1.2
Shortleaf pine										
Softwood	--	--	15.4	--	5.4	0.2	--	--	6.7	0.1
Hardwood	--	--	1.6	0.6	1.2	0.4	--	1.2	1.0	0.7
Pond pine										
Softwood	13.8	1.5	18.0	0.9	8.4	0.8	1.1	0.8	9.2	0.9
Hardwood	0.6	0.2	0.2	0.1	--	--	--	(4/)	0.1	(4/)
Oak-pine										
Softwood	7.7	0.1	7.0	0.3	3.1	0.1	1.1	0.1	4.9	0.2
Hardwood	14.0	3.9	11.3	3.2	3.8	2.0	0.7	1.1	7.7	2.6
Upland hwdws.										
Softwood	1.3	--	2.3	(4/)	0.7	0.1	0.7	--	1.4	(4/)
Hardwood	15.9	5.6	13.3	2.5	6.3	2.6	1.5	1.8	10.6	3.3
Oak-gum-cypress										
Softwood	3.2	0.4	4.0	0.2	1.5	0.1	0.5	0.1	2.5	0.2
Hardwood	21.7	8.2	17.4	6.1	8.5	5.4	1.1	2.5	13.6	5.9
All types										
Softwood	9.4	0.4	13.4	0.4	5.4	0.3	1.0	0.3	8.2	0.4
Hardwood	14.1	5.3	7.2	2.4	3.7	2.3	0.6	1.2	6.8	2.8

^{1/} Sound wood and bark.

^{2/} Sound trees.

^{3/} Cull trees.

^{4/} Less than 0.05 cord per acre.

Table 16.--Number of trees^{1/} by species group, quality class, and tree size, 1955

(In thousand trees)

Species group and quality class	Sapling-size trees	Pole-size trees	Small sawtimber trees	Large sawtimber trees	All trees
Yellow pines:					
Sound trees	378,951	112,444	66,469	11,625	569,489
Sound culls	(2/)	9,997	2,398	510	12,905
Rotten culls	(2/)	87	41	49	177
Total	378,951	122,528	68,908	12,184	582,571
Other softwoods:					
Sound trees	39,732	10,106	4,458	1,498	55,794
Sound culls	(2/)	866	535	154	1,555
Rotten culls	(2/)	97	108	176	381
Total	39,732	11,069	5,101	1,828	57,730
Soft hardwoods:					
Sound trees	514,205	103,248	23,222	10,686	651,361
Sound culls	(2/)	40,394	6,339	4,416	51,149
Rotten culls	(2/)	6,553	1,954	3,216	11,723
Total	514,205	150,195	31,515	18,318	714,233
Hard hardwoods:					
Sound trees	247,138	41,719	7,869	4,603	301,329
Sound culls	(2/)	25,098	2,219	1,420	28,737
Rotten culls	(2/)	4,176	451	330	4,957
Total	247,138	70,993	10,539	6,353	335,023
All species	1,180,026	354,785	116,063	38,683	1,689,557

^{1/} All trees 1.0 inch d.b.h. and larger.

^{2/} Data not collected.

Table 17.--Area^{1/} of seedling, sapling, and poorly stocked stands by
plantability class, 1955

(In thousand acres)

Forest type	No planting required ^{2/}	Suitable for machine planting	Hand planting required	All classes
Longleaf pine	10.9	3.4	--	14.3
Loblolly pine	139.5	4.6	8.4	152.5
Shortleaf pine	4.8	--	4.8	9.6
Pond pine	211.6	3.4	2.1	217.1
Oak-pine	70.0	3.3	--	73.3
Upland hdwds.	33.5	--	--	33.5
Scrub oak	--	--	2.1	2.1
All types	470.3	14.7	17.4	502.4
Percent	93.6	2.9	3.5	100.0

^{1/} Excludes entire area of oak-gum-cypress type, and 40 thousand acres of other types on which planting would be impractical because of dense brush cover.

^{2/} Sufficient seed trees present or area is restocking naturally.

Table 18.--Stocking on commercial forest area by forest type and tree-size class, 1955

(In thousand acres)

GROWING STOCK OF ALL SIZES

Forest type	Non-stocked 0-9%	Poor stocking 10-39%	Medium stocking 40-69%	Good stocking 70-100%	Total area
Longleaf pine	--	16.2	20.4	18.5	55.1
Loblolly pine	14.1	135.8	259.1	1,000.5	1,409.5
Shortleaf pine	2.6	2.2	9.5	18.2	32.5
Pond pine	44.5	197.4	184.6	221.3	647.8
Oak-pine	9.2	45.7	108.4	234.0	397.3
Upland hdwds.	--	29.1	45.6	122.3	197.0
Scrub oak	--	2.1	--	--	2.1
Oak-gum-cypress	56.1	300.7	404.6	637.7	1,399.1
All types	126.5	729.2	1,032.2	2,252.5	4,140.4
Percent	3.1	17.6	24.9	54.4	100.0

SAWTIMBER GROWING STOCK

Longleaf pine	28.5	22.4	4.2	--	55.1
Loblolly pine	261.0	543.1	353.4	252.0	1,409.5
Shortleaf pine	16.0	7.1	9.4	--	32.5
Pond pine	280.0	235.2	81.0	51.6	647.8
Oak-pine	116.3	186.9	62.9	31.2	397.3
Upland hdwds.	41.1	108.6	34.9	12.4	197.0
Scrub oak	2.1	--	--	--	2.1
Oak-gum-cypress	391.9	547.5	295.7	164.0	1,399.1
All types	1,136.9	1,650.8	841.5	511.2	4,140.4
Percent	27.5	39.9	20.3	12.3	100.0

Table 19.--Net annual growth by species group and unit of
of measure, 1955

Species group	Sawtimber	Growing stock	
	<u>Million bd. ft.</u>	<u>Million cu. ft.</u>	<u>Thousand cords</u>
So. yellow pines	563.4	125.8	1,842
Other softwoods	22.5	5.1	69
Soft hardwoods	176.6	70.9	1,059
Hard hardwoods	61.4	25.3	370
All species	823.9	227.1	3,340

Table 20.--Net annual growth percentages for each species group and
unit of measure, 1955

Unit of measure	Southern yellow pines	Other softwoods	Soft hardwoods	Hard hardwoods	All species
Board feet	6.16	2.41	3.82	3.85	5.06
Cubic feet	5.41	2.28	4.63	4.62	4.91
Standard cords	5.85	2.61	5.12	5.05	5.37

Table 21.--Average growth of sawtimber per acre by forest type
and stand-size class, 1955

(In board feet)

Forest type	Stand-size class			All stands
	Sawtimber	Poletimber	Other stands	
Longleaf pine	302	127	17	153
Loblolly pine	423	144	40	325
Shortleaf pine	273	75	--	110
Pond pine	313	85	22	153
Oak-pine	283	154	21	195
Oak-hickory	214	103	31	159
Oak-gum-cypress	270	88	29	183
All types	335	114	28	226

Table 22.--Average growth of growing stock per acre by forest type
and stand-size class, 1955

(In standard cords)

Forest type	Stand-size class			All stands
	Sawtimber	Poletimber	Other stands	
Longleaf pine	0.8	1.0	0.1	0.7
Loblolly pine	1.3	1.2	0.2	1.1
Shortleaf pine	0.8	0.7	--	0.5
Pond pine	0.9	0.6	0.1	0.5
Oak-pine	1.1	0.6	0.1	0.8
Oak-hickory	0.9	0.5	0.1	0.7
Oak-gum-cypress	1.1	1.0	0.1	0.9
All types	1.1	0.9	0.1	0.9

(In cubic feet)

Longleaf pine	62.3	64.2	6.9	48.7
Loblolly pine	94.0	77.3	15.2	82.2
Shortleaf pine	59.0	50.0	--	37.8
Pond pine	65.8	42.1	5.6	37.8
Oak-pine	82.0	41.4	8.8	56.2
Oak-hickory	65.4	34.5	7.8	49.1
Oak-gum-cypress	83.7	68.9	7.5	64.6
All types	84.6	62.1	8.4	64.4

Table 23.--Average annual drain on sawtimber by tree-size class and species group

(In million board feet)

Tree-size class	Softwoods		Soft hardwoods	Hard hardwoods	All species
	Pine	Other			
Small sawtimber	232.8	11.1	15.6	9.4	268.9
Large sawtimber	165.6	10.6	86.0	24.6	286.8
All trees	398.4	21.7	101.6	34.0	555.7

Table 24.--Average annual drain on growing stock by tree-size class and species group

(In thousand cords)

Tree-size class	Softwoods		Soft hardwoods	Hard hardwoods	All species
	Pine	Other			
Pole trees	85	15	61	29	190
Small sawtimber	660	27	50	32	769
Large sawtimber	371	19	208	63	661
All trees	1,116	61	319	124	1,620

(In million cubic feet)

Pole trees	5.6	1.1	3.8	1.8	12.3
Small sawtimber	49.3	2.2	3.8	2.5	57.8
Large sawtimber	30.5	1.9	17.1	5.1	54.6
All trees	85.4	5.2	24.7	9.4	124.7

Table 25.--Net annual change in sawtimber volume by species group

(In million board feet)

Item	Southern yellow pines	Other softwoods	Soft hardwoods	Hard hardwoods	All species
Net volume, Jan. 1	9,142.0	934.0	4,623.2	1,594.9	16,294.1
Total growth	603.6	32.2	211.3	73.2	920.3
Mortality	40.2	9.7	34.7	11.8	96.4
Net growth	563.4	22.5	176.6	61.4	823.9
Timber cut	398.4	21.7	101.6	34.0	555.7
Loss or gain	+165.0	+0.8	+75.0	+27.4	+268.2
Net volume, Dec. 31	9,307.0	934.8	4,698.2	1,622.3	16,562.3
Percent change	+1.8	+0.1	+1.6	+1.7	+1.6

Table 26.--Net annual change in growing stock by species group

(In thousand cords)

Item	Southern yellow pines	Other softwoods	Soft hardwoods	Hard hardwoods	All species
Net volume, Jan. 1	31,510	2,645	20,678	7,324	62,157
Total growth	2,081	108	1,215	423	3,827
Mortality	239	39	156	53	487
Net growth	1,842	69	1,059	370	3,340
Timber cut	1,116	61	319	124	1,620
Loss or gain	+726	+8	+740	+246	+1,720
Net volume, Dec. 31	32,236	2,653	21,418	7,570	63,877
Percent change	+2.3	+0.3	+3.6	+3.4	+2.8

(In million cubic feet)

Net volume, Jan. 1	2,324.2	224.3	1,531.7	546.6	4,626.8
Total growth	142.3	8.3	82.6	29.3	262.5
Mortality	16.5	3.2	11.7	4.0	35.4
Net growth	125.8	5.1	70.9	25.3	227.1
Timber cut	85.4	5.2	24.7	9.4	124.7
Loss or gain	+40.4	-0.1	+46.2	+15.9	+102.4
Net volume, Dec. 31	2,364.6	224.2	1,577.9	562.5	4,729.2
Percent change	+1.7	0.0	+3.0	+2.9	+2.2

Table 27.--County area by broad use class, 1955

County	Total area ^{1/}	Nonforest area		Forest land		
		Land	Water	Non- commercial	Commercial	
	<u>Thousand acres</u>	<u>Thousand acres</u>	<u>Thousand acres</u>	<u>Thousand acres</u>	<u>Thousand acres</u>	<u>Percent</u>
Beaufort	612.5	187.6	84.5	--	340.4	64.5
Bertie	461.4	132.1	20.6	--	308.7	70.0
Camden	197.1	47.0	45.0	--	105.1	69.1
Carteret	680.3	104.5	342.5	31.1	202.2	59.9
Chowan	149.8	48.5	35.1	--	66.2	57.7
Craven	502.4	107.9	40.8	23.9	329.8	71.4
Currituck	300.2	72.9	128.1	1.1	98.1	57.0
Dare	797.4	50.1	550.5	38.6	158.2	64.1
Edgecombe	327.0	159.9	0.6	--	166.5	51.0
Gates	223.4	60.0	4.6	--	158.8	72.6
Halifax	463.4	184.9	5.2	--	273.3	59.6
Hertford	231.0	74.0	4.4	--	152.6	67.3
Hyde	873.0	103.9	470.6	109.8	188.7	46.9
Martin	308.5	102.2	1.6	--	204.7	66.7
Nash	353.3	172.3	0.6	--	180.4	51.1
Northampton	348.2	139.8	4.3	--	204.1	59.3
Pamlico	368.6	63.7	152.4	21.8	130.7	60.5
Pasquotank	185.6	60.3	39.2	--	86.1	58.8
Perquimans	207.4	64.0	41.1	--	102.3	61.5
Pitt	419.8	199.7	0.9	--	219.2	52.3
Tyrrell	373.1	19.1	118.6	7.1	228.3	89.7
Washington	268.8	67.0	54.0	28.4	119.4	55.6
Wilson	238.7	121.6	0.5	--	116.6	49.0
Unit total	8,890.9	2,343.0	2,145.7	261.8	4,140.4	61.4

^{1/} Gross area from Bureau of the Census, 1950.

Table 28.--Ownership of commercial forest land by county, 1955

County	Private		Public					
			National forest	Other Federal	State	County city, town	Total public	
	Thousand acres	Percent	Thousand acres	Thousand acres	Thousand acres	Thousand acres	Thousand acres	Percent
Beaufort	340.3	100.0	--	--	--	0.1	0.1	(1/)
Bertie	308.3	99.9	--	--	0.3	0.1	0.4	0.1
Camden	105.0	99.9	--	0.1	--	--	0.1	0.1
Carteret	162.9	80.6	38.4	0.9	--	--	39.3	19.4
Chowan	65.8	99.4	--	0.3	--	0.1	0.4	0.6
Craven	285.6	86.6	37.5	6.5	0.1	0.1	44.2	13.4
Currituck	95.9	97.8	--	1.3	0.8	0.1	2.2	2.2
Dare	158.2	100.0	--	--	--	--	--	--
Edgecombe	166.2	99.8	--	--	0.3	(1/)	0.3	0.2
Gates	158.8	100.0	--	--	--	--	--	--
Halifax	272.8	99.8	--	--	0.4	0.1	0.5	0.2
Hertford	152.6	100.0	--	--	(1/)	--	(1/)	--
Hyde	185.6	98.4	--	3.1	--	--	3.1	1.6
Martin	204.5	99.9	--	--	--	0.2	0.2	0.1
Nash	180.3	99.9	--	--	(1/)	0.1	0.1	0.1
Northampton	204.1	100.0	--	--	(1/)	(1/)	(1/)	--
Pamlico	130.2	99.6	--	0.5	--	--	0.5	0.4
Pasquotank	85.5	99.3	--	0.2	(1/)	0.4	0.6	0.7
Perquimans	101.5	99.2	--	--	(1/)	0.8	0.8	0.8
Pitt	218.8	99.8	--	--	(1/)	0.4	0.4	0.2
Tyrrell	228.2	100.0	--	0.1	--	--	0.1	(1/)
Washington	119.0	99.7	--	--	0.4	(1/)	0.4	0.3
Wilson	116.2	99.7	--	--	0.1	0.3	0.4	0.3
Unit total	4,046.3	97.7	75.9	13.0	2.4	2.8	94.1	2.3

1/ Less than 50 acres, or 0.05 percent.

Table 29.--Net volume^{1/} of sawtimber by county and species group, 1955

(In million board feet)

County	Softwoods ^{2/}	Gum, maple, and yellow- poplar ^{3/}	Oaks and other hard hardwoods	All species
Beaufort	888.2	275.9	81.2	1,245.3
Bertie	842.3	529.7	235.9	1,607.9
Camden	195.6	165.9	7.3	368.8
Carteret	345.0	56.1	4.5	405.6
Chowan	193.1	44.2	51.2	288.5
Craven	645.4	251.2	77.9	974.5
Currituck	311.6	144.0	31.0	486.6
Dare	304.1	127.5	0.2	431.8
Edgecombe	359.8	213.6	78.0	651.4
Gates	490.0	191.3	70.2	751.5
Halifax	372.7	333.2	122.4	828.3
Hertford	419.2	260.4	138.0	817.6
Hyde	466.6	209.7	34.0	710.3
Martin	555.0	323.7	97.8	976.5
Nash	469.9	130.0	97.3	697.2
Northampton	389.4	262.1	154.5	806.0
Pamlico	312.6	102.1	40.5	455.2
Pasquotank	277.1	101.8	32.3	411.2
Perquimans	228.6	141.8	79.2	449.6
Pitt	562.5	289.5	71.3	923.3
Tyrrell	766.7	180.9	9.3	956.9
Washington	257.9	135.2	48.1	441.2
Wilson	422.7	153.4	32.8	608.9
Unit total	10,076.0	4,623.2	1,594.9	16,294.1

^{1/} Log scale, International 1/4-inch rule.

^{2/} Includes pine, cypress, and cedar.

^{3/} Includes other soft hardwoods.

Table 30.--Net volume^{1/} of sawtimber by county, broad species group,
and diameter-class group, 1955

(In million board feet)

County	Softwoods			Hardwoods		
	9-14 inches	15-19 inches	20+ inches	11-14 inches	15-19 inches	20+ inches
Beaufort	502.3	273.1	112.8	142.2	140.0	74.9
Bertie	495.5	235.9	110.9	285.9	283.6	196.1
Camden	110.2	65.7	19.7	82.6	48.3	42.3
Carteret	255.0	79.2	10.8	46.6	14.0	--
Chowan	111.9	59.1	22.1	42.3	30.5	22.6
Craven	422.9	154.0	68.5	146.4	127.3	55.4
Currituck	173.3	80.7	57.6	98.0	49.1	27.9
Dare	188.2	73.9	42.0	88.6	31.4	7.7
Edgecombe	213.1	103.0	43.7	89.2	118.9	83.5
Gates	307.5	127.0	55.5	109.6	80.9	71.0
Halifax	271.9	64.8	36.0	152.7	145.0	157.9
Hertford	282.0	78.4	58.8	161.6	126.4	110.4
Hyde	273.2	135.7	57.7	127.5	82.5	33.7
Martin	341.9	150.0	63.1	120.0	117.2	184.3
Nash	235.8	132.0	102.1	87.3	74.1	65.9
Northampton	220.4	79.0	90.0	178.5	134.7	103.4
Pamlico	251.9	56.4	4.3	61.3	64.6	16.7
Pasquotank	123.5	125.8	27.8	70.1	31.0	33.0
Perquimans	128.3	65.7	34.6	104.3	65.3	51.4
Pitt	333.1	145.5	83.9	137.2	140.9	82.7
Tyrrell	521.1	195.3	50.3	93.8	58.4	38.0
Washington	183.5	66.0	8.4	100.7	47.8	34.8
Wilson	216.2	112.9	93.6	68.5	62.3	55.4
Unit total	6,162.7	2,659.1	1,254.2	2,594.9	2,074.2	1,549.0

^{1/} Log scale, International 1/4-inch rule.

Table 31.--Net volume^{1/} of all timber by county, pulping species group, and tree-diameter group,

1955

(In thousand cords)

GROWING STOCK

County	Yellow pines		Other softwoods		Soft hardwoods		Hard hardwoods		All species
	5 - 12 inches	13+ inches	5 - 12 inches	13+ inches	5 - 12 inches	13+ inches	5 - 12 inches	13+ inches	
Beaufort	1,599	1,169	62	126	505	584	245	172	4,462
Bertie	1,371	1,013	55	167	1,104	1,191	400	556	5,857
Camden	294	305	141	24	397	334	61	16	1,572
Carteret	1,200	389	30	16	150	128	30	11	1,954
Chowan	281	279	7	--	161	86	74	119	1,007
Craven	1,390	784	64	65	520	555	202	190	3,770
Currituck	430	401	16	61	588	252	150	65	1,963
Dare	738	257	158	76	543	219	4	--	1,995
Edgecombe	720	506	16	27	262	505	150	187	2,373
Gates	992	579	109	96	554	410	178	158	3,076
Halifax	1,133	452	4	20	734	695	392	293	3,723
Hertford	863	479	43	53	386	563	275	276	2,938
Hyde	628	583	69	99	683	399	123	83	2,667
Martin	994	620	28	119	492	748	171	238	3,410
Nash	889	638	15	31	317	297	277	226	2,690
Northampton	695	354	56	176	452	576	209	369	2,887
Pamlico	893	323	3	10	330	200	74	108	1,941
Pasquotank	262	437	129	36	314	217	42	64	1,501
Perquimans	298	310	28	35	357	311	212	168	1,719
Pitt	712	745	31	70	658	617	173	163	3,169
Tyrrell	1,466	951	183	46	672	368	19	18	3,723
Washington	476	347	20	22	325	240	96	106	1,632
Wilson	581	684	3	--	357	322	114	67	2,128
Unit total	18,905	12,605	1,270	1,375	10,861	9,817	3,671	3,653	62,157

OTHER MATERIAL

Beaufort	39	3	1	8	205	210	54	97	617
Bertie	97	41	9	11	391	879	212	274	1,914
Camden	4	4	9	12	154	168	33	16	400
Carteret	56	--	3	4	43	13	24	15	158
Chowan	14	2	--	--	84	109	27	65	301
Craven	60	60	1	--	128	236	95	134	714
Currituck	--	18	--	--	73	137	37	27	292
Dare	82	17	5	13	147	62	36	2	364
Edgecombe	23	24	3	3	69	365	103	104	694
Gates	16	20	7	59	102	291	47	51	593
Halifax	57	29	--	9	95	336	137	203	866
Hertford	12	11	12	49	79	202	105	129	599
Hyde	44	10	7	9	152	121	97	25	465
Martin	32	13	2	7	153	508	46	87	848
Nash	17	21	--	--	75	74	93	87	367
Northampton	68	5	5	3	260	216	63	168	788
Pamlico	21	3	--	--	77	61	29	40	231
Pasquotank	--	6	3	--	114	217	27	20	387
Perquimans	3	6	--	--	101	58	33	66	267
Pitt	26	19	8	--	170	248	104	176	751
Tyrrell	123	36	29	3	206	242	80	20	739
Washington	11	15	7	3	175	251	36	44	542
Wilson	17	7	--	--	97	118	49	39	327
Unit total	822	370	111	193	3,150	5,122	1,567	1,889	13,224

^{1/} Sound wood and bark.

Table 32.--Average annual sawtimber drain by county and species group^{1/}

(In million board feet)

County	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
Beaufort	28.9	--	4.7	1.7	35.3
Bertie	52.4	1.8	13.8	1.9	69.9
Camden, Chowan, & Pasquotank	4.5	1.3	5.8	3.1	14.7
Carteret	15.4	--	1.0	--	16.4
Craven	16.8	--	4.6	0.4	21.8
Currituck	8.7	0.7	--	--	9.4
Dare	3.5	0.1	--	--	3.6
Edgecombe	17.2	3.5	7.3	--	28.0
Gates	9.2	--	7.6	4.0	20.8
Halifax	36.1	3.3	7.5	10.4	57.3
Hertford	13.7	--	3.8	1.5	19.0
Hyde	42.4	1.9	9.2	--	53.5
Martin	34.0	1.7	9.3	--	45.0
Nash	17.7	--	1.8	0.6	20.1
Northampton	14.3	0.9	1.4	6.2	22.8
Pamlico	11.6	--	2.7	--	14.3
Perquimans	9.7	--	2.2	0.8	12.7
Pitt	40.4	1.0	18.2	--	59.6
Tyrrell	6.1	4.0	--	--	10.1
Washington	3.6	1.5	0.7	3.2	9.0
Wilson	12.2	--	--	0.2	12.4
Unit total	398.4	21.7	101.6	34.0	555.7

^{1/} Estimates of timber drain by county are less accurate than inventory volumes, and use of individual county statistics should be avoided. For general use, data for a minimum of 10 counties should be combined.

Table 33.--Average annual drain on growing stock by county and species group^{1/}

(In thousand cords)

County	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
Beaufort	83	4	16	9	112
Bertie	142	5	45	12	204
Camden, Chowan, & Pasquotank	14	3	21	10	48
Carteret	45	--	6	1	52
Craven	56	--	19	4	79
Currituck	21	2	--	--	23
Dare	9	--	--	--	9
Edgecombe	41	8	21	--	70
Gates	24	--	19	11	54
Halifax	101	6	19	28	154
Hertford	41	3	12	7	63
Hyde	120	5	25	1	151
Martin	85	4	24	--	113
Nash	51	2	7	5	65
Northampton	41	2	3	18	64
Pamlico	33	--	7	--	40
Perquimans	28	2	7	3	40
Pitt	120	2	59	4	185
Tyrrell	20	9	--	--	29
Washington	9	4	9	10	32
Wilson	32	--	--	1	33
Unit total	1,116	61	319	124	1,620

^{1/} Estimates of timber drain by county are less accurate than inventory volumes, and use of individual county statistics should be avoided. For general use, data for a minimum of 10 counties should be combined.

DEFINITION OF TERMS

Land-Use Classes

Forest land: Includes (a) lands which are at least 10 percent stocked with trees of any size and capable of producing sawtimber or other wood products, and (b) lands from which the trees described in (a) have been removed to less than 10-percent stocking but which have not been developed for other use; subdivided into the following classes:

Commercial: Forest land which is (a) producing, or physically capable of producing, usable crops of wood (usually sawtimber), (b) economically available now or in the future, and (c) not withdrawn from timber use.

Noncommercial: Forest land (a) withdrawn from timber utilization through statute, ordinance, or administrative order but which otherwise qualifies as commercial forest land, or (b) incapable of yielding usable wood products (usually sawtimber) because of adverse site conditions, or so physically inaccessible as to be unavailable economically in the foreseeable future.

Nonforest land: Includes land under cultivation or in pasture where the timber has been cleared to less than 10 percent stocking, idle or abandoned agricultural land, marsh land, and land in urban, residential, or industrial areas, school yards, cemeteries, roads, railroads, and other rights-of-way.

Water: Includes lakes, bays, and estuaries over 40 acres in size, and streams, canals, and sloughs at least one-eighth of a mile in width which are classed as "inland water" by the Bureau of the Census. Smaller lakes and ponds between one acre and 40 acres in size, and waterways between 120 feet and 660 feet in width, which are classed as land area by the Bureau of the Census, are also included as water areas.

Forest Types

Forest type is determined on the basis of cubic volume for all stand sizes except seedlings and saplings (stand size 4), in which case the number of stems are the criteria.

Pine types: Forests in which 50 percent or more of the stand is in pine species. Plurality of volume or number of trees is used to determine the specific type.

Oak-pine type: Forests in which 50 percent or more of the stand is hardwoods, usually upland oaks, but in which southern yellow pines make up 25-49 percent of the stand.

Oak-hickory type:

Upland hardwood: Forests in which 50 percent or more of the stand is composed of upland oak, hickory, yellow-poplar, maple, gum, and other hardwoods, except where pines comprise 25-49 percent of the stand.

Scrub oak: Upland forests in which 50 percent or more of the stand is composed of scrub oak species, except where pines comprise 25-49 percent of the stand.

Oak-gum-cypress type: Bottomland forests in which 50 percent or more of the stand is tupelo, blackgum, sweetgum, ash, oak, elm, maple, in mixture with cypress and other associated species, except where pines comprise 25-49 percent of the stand.

Stand-Size Classes

Sawtimber: Stands containing at least 1,500 board feet net volume per acre, International 1/4-inch log rule, in sound, live, softwood trees 9.0 inches d.b.h. or larger, or hardwood trees 11.0 inches d.b.h. or larger. Two classes of sawtimber stands are recognized:

Large sawtimber: Stands of sawtimber having more than 50 percent of the net board-foot volume in trees 15.0 inches d.b.h. or larger.

Small sawtimber: Stands of sawtimber having 50 percent or less of the net board-foot volume in trees 15.0 inches d.b.h. or larger.

Poletimber: Stands failing to meet the minimum sawtimber specifications, but at least 10-percent stocked with trees 5.0 inches d.b.h. or larger and with at least half the minimum stocking in pole-size trees.

Seedling and saplings: Stands not qualifying as sawtimber or poletimber stands, but having at least a 10-percent stocking of trees of commercial species and with half the minimum stocking in seedlings and saplings.

Nonstocked and other areas: Forest areas not qualifying as sawtimber, poletimber, or seedling and sapling stands.

Diameters

D.b.h. (diameter at breast height): Stem diameter in inches, outside bark, measured at 4-1/2 feet above the ground.

Diameter class: All trees were tallied by 2-inch diameter classes, each class including diameters 1.0 inch below and 0.9 inch above the stated midpoint, e.g., trees 7.0 to and including 8.9 inches are included in the 8-inch class. Corresponding limits apply to other diameter classes.

Timber Quality Classification

Growing Stock

Sawtimber trees: Live softwood trees at least 9.0 inches d.b.h. and hardwood trees at least 11.0 inches d.b.h., with not less than one merchantable log 12 feet long, or with less than 50 percent of the gross volume of the tree in sound sawtimber. To be merchantable all saw logs must be at least 8 feet long and at least 50 percent sound. They must also meet the following requirements:

Softwood logs^{1/} must have a scaling diameter of 6 inches or larger, and sweep or crook must not exceed two-thirds of the scaling diameter.

Hardwood logs must have a scaling diameter of 8 inches or larger and must pass specifications^{2/} for standard lumber logs, or tie and timber logs.

Poletimber trees: Straight-boled trees between 5.0 inches d.b.h. and sawtimber size.

Sapling-size trees: Trees 1.0 inch to 4.9 inches d.b.h. which will grow into poletimber or sawtimber-size trees of sound quality.

Other Material

Sound cull trees: Live trees of all sizes that are unmerchantable for saw logs now or prospectively because of species, poor form, excessive liminess, or other sound defect.

Rotten cull trees: Live trees of all sizes that are unmerchantable for saw logs now or prospectively because of rotten defect.

Hardwood limbs: The limb volume of all hardwood sawtimber and cull trees to a minimum diameter of 4.0 inches inside bark.

Species Groups

Yellow pines: Includes longleaf, slash, loblolly, pond, Virginia, and shortleaf pine.

Other softwoods: Cypress, eastern redcedar, and Atlantic whitecedar.

Soft hardwoods: Blackgum, tupelo, yellow-poplar, sweetgum, cottonwood, soft maple, basswood, willow, sweetbay, sycamore, and hackberry.

Hard hardwoods: All of the oaks, hickories, ash, beech, river birch, black locust, mulberry, black walnut, holly, dogwood, and persimmon.

^{1/} For detailed specifications of log grades, see "Interim log grades for southern pine". Southern Forest Experiment Station, 18 pp. 1953.

^{2/} For detailed hardwood log grade specifications, see "Hardwood log grades for standard lumber: proposals and results". U. S. Forest Products Laboratory, D1737, 1949.

Volume Estimates

Board-foot volume: The volume in board feet, measured by the International 1/4-inch rule, exclusive of defect, of that portion of sound sawtimber trees between the stump and the upper limit of merchantability for saw logs.

Volume in cords: For sound trees the volume in standard cords (including bark) of the sound portion of trees 5.0 inches d.b.h. and larger, between stump and a minimum top-stem diameter of 4.0 inches inside bark. Similar volumes are given for cull trees. The volume in limbs, which are at least 4.0 inches in diameter inside bark, is shown separately for all sawtimber-size hardwoods.

Volume in cubic feet: Same as volume shown in cords except bark is not included.

International 1/4-inch log rule: A rule for estimating the board-foot volume of 4-foot log sections, according to the formula $V = .905 (0.22D^2 - 0.71D)$. The taper allowance for computing the volume in log lengths greater than four feet is 0.5 inch per 4-foot section. Allowance for saw kerf is 1/4 inch.

Standard cord: A stacked pile, 4 x 4 x 8 feet, of round or split bolts, estimated to contain, on the average, about 74 cubic feet of solid wood.

Growth and Timber Cut

Net growth.--The estimated volume of net growth includes the growth on the present growing stock, the growth on trees which died or were cut during the year, and the ingrowth resulting from smaller trees reaching volume size. It excludes mortality, or loss of volume in trees dying from natural causes. Net growth estimates are based on growth of sound trees. Growth of "other material" is not included.

In board feet: The change during the calendar year in sawtimber volume resulting from growth, ingrowth, and mortality losses.

In cubic feet or cords: The change during the calendar year in the volume of all sound trees 5.0 inches and larger resulting from growth, ingrowth, and mortality losses.

Timber cut.--The volume of timber cut is based on the measurement and tally of stumps found on regular ground sample plots. Stumps of all trees cut during the past 3-year period are recorded and the measurements are converted into equivalent tree volume. The average yearly volume of timber cut for the 3-year period is then taken as the annual estimate. Board-foot volumes include the saw-log portion of all sawtimber-size trees which were cut. Estimates in cubic feet or cords include the entire stem from stump to 4.0-inch top of all sound trees 5.0 inches in diameter and larger. Timber cut from cull or dead trees is not included.

Stocking

Stocking is the extent to which growing space is effectively utilized by trees. The number of stems present by d.b.h. classes was used as a basis for stocking classification. Areas having the minimum numbers of trees listed below, either in a single diameter class or proportionately in any combinations of diameter classes, were considered fully stocked.

<u>D.b.h.</u>	<u>Minimum number trees per acre</u>
Seedlings	1,000
2 inches	800
4 inches	590
6 inches	400
8 inches	240
10 inches	155
12 inches	115
14 inches	90

RELIABILITY OF FOREST SURVEY DATA

In general, the errors which affect the accuracy of Forest Survey area and timber volume estimates arise from two sources. These may be described as (1) sampling errors which result from using sampling procedures rather than making a complete inventory or canvass, and (2) non-sampling errors which arise from human mistakes in judgment, measurement, recording, or arithmetic.

In Forest Survey work a diligent effort is made to maintain a high degree of accuracy in the collection and compilation of data. The sampling errors are held to a specified minimum through survey design and sampling technique. These errors are the only measurable errors involved in computing the reliability of the data. The non-sampling errors are minimized or eliminated through training, supervision, field check cruises, and complete editing and machine verification in compiling the data.

Forest area.--The sampling intensity of the 1955 survey provided an estimate of the total forest area in the State with a standard error of ± 0.7 percent. The probabilities are two out of three that the actual forest area is within ± 0.7 percent of the estimated acreage. The standard error per million acres was ± 1.5 percent.

Cubic volume.--The standard error of the net cubic-foot volume estimate was ± 2.1 percent, or ± 4.5 percent per billion cubic feet. Here again, the probabilities are two out of three that the actual volume does not vary from the estimated volume by more than this percentage. The error of the volume in standard cords was not computed but it should be approximately the same.

Board-foot volume.--The standard error of the total board-foot volume estimate was ± 2.4 percent.

Growth.--Estimates of timber growth are based on measurements of radial growth in sample trees, and on mortality data taken on sample plots. Because of technical problems involved, no attempt was made to compute the sampling error of growth estimates.

Timber cut.--Estimates of the amount of timber cut were based on the number and size of stumps tallied on cutover plots. Stumps of all trees cut during the 3-year period preceding date of inventory were recorded, and the measurements were converted into tree volume. The average volume of timber cut for the 3-year period was taken as the annual estimate. The standard error for the total volume of growing stock cut was ± 9.5 percent, or ± 3.4 percent per billion cubic feet.

Use of county data.--The tables showing forest area, timber volumes, and timber cut by county are included to permit grouping of the data in any desired area combinations. In designing the survey, provision was made for controlling the range of sampling error on a county basis. However, comparison or use of individual county statistics should be avoided because of the possibility that they may be subject to considerable error. It is recommended that area or volume data for a minimum of five counties be combined, and that at least 10 counties be used when working with data on timber cut.

The actual range of errors on county data are shown below:

<u>Item</u>	<u>Percent of error</u>	
	<u>Low</u>	<u>High</u>
Forest area	± 1.6	± 7.7
Growing stock volume	± 6.6	± 16.9
Board-foot volume	± 7.1	± 19.1

HOW THE FOREST INVENTORY IS MADE

The present system of inventory is a two-step method which includes land-use classification of points on aerial photographs followed by the cruising of ground sample plots. The county is the basic work unit. The detailed procedure is as follows:



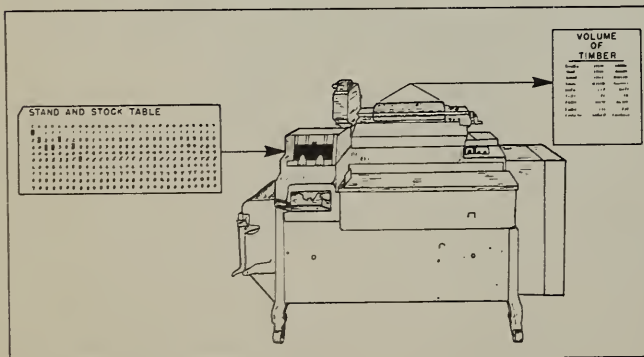
1. Preliminary estimates of the acreage of land in forests and other land-use classes are obtained by classifying points printed on every third aerial photograph in alternate flight lines within a county. The proportion of points falling in each class is used to estimate the acreage. This estimate is later checked and revised through the use of ground plots.



2. Ground sample plots are selected in a systematic manner from the forest land classifications made in Step 1, using an interval which will provide sufficient plots to meet established limits of error per billion cubic feet of timber. This results in a proportional sample of all existing timber stands. Timber cruisers make a detailed description and tally of the ground plots to obtain data on timber volume, quality, stocking, and mortality. Samples of agricultural and other photo classifications are also checked on the ground to verify or adjust the area estimates based on these classifications.



3. Growth estimates are based on increment borings taken proportionally from sample trees of various diameters and species in each forest type and stand class. The volume of timber cut is computed from a tally of the stumps of trees cut on the plots during a specified period.



4. All field data are sent to Asheville for editing and are placed on punch cards for machine sorting and tabulation. Final estimates are based on statistical summaries of the data.

FOREST SURVEY REPORTS PUBLISHED SINCE 1945

Southeastern Forest Experiment Station

- No. 21 - 1945 Pulpwood Production by County in the Carolinas and Virginia
- No. 22 - Southern Forests as a Source of Pulpwood
- No. 23 - 1946 Pulpwood Production by County in the Southeast
- No. 24 - Southern Pulpwood Production and the Timber Supply
- No. 25 - Forest Resources of the Lower Coastal Plain of South Carolina
- No. 26 - 1946 Commodity Drain by County from South Carolina Forests
- No. 27 - 1947 Pulpwood Production by County in the Southeast
- No. 28 - South Carolina's Forest Resources, 1947
- No. 29 - 1948 Pulpwood Production by County in the Southeast
- No. 30 - Forest Resources of Northeast Florida, 1949
- No. 31 - Forest Resources of Central Florida, 1949
- No. 32 - Forest Resources of Northwest Florida, 1949
- No. 33 - Forest Resources of South Florida, 1949
- No. 34 - Timber Production and Commodity Drain from Florida's Forests, 1948
- No. 35 - 1949 Pulpwood Production in the South (Out of print)
- No. 36 - Forest Statistics for Florida, 1949
- No. 37 - Forest Statistics for Southwest Georgia, 1951
- No. 38 - 1951 Pulpwood Production in the South
- No. 39 - Forest Statistics for Southeast Georgia, 1952
- No. 40 - Forest Statistics for Central Georgia, 1952
- No. 41 - Forest Statistics for the Southern Coastal Plain of North Carolina, 1952
- No. 42 - Forest Statistics for North Central and North Georgia, 1953
- No. 43 - 1953 Pulpwood Production in the South
- No. 44 - Forest Statistics for Georgia, 1951-53

OTHER REPORTS

- Pulpwood Production in the South, 1950. Forest Survey Release No. 69
- 1952 Pulpwood Production in the South. Forest Survey Release No. 72
- Virginia Forest Resources and Industries, 1949. U. S. Dept. Agr. Misc. Pub. No. 681
- The Timber Supply Outlook in South Carolina, 1951. U. S. Dept. Agr. Resource Report No. 3
- The Timber Supply Situation in Florida, 1952. U. S. Dept. Agr. Resource Report No. 6

